CLAIMS

1. A method of manufacturing a semiconductor device, in which on a region of silicon oxide situated next to a region of monocrystalline silicon at a surface of a semiconductor body, a non-monocrystalline auxiliary layer is formed, characterized in that the auxiliary layer is formed in two process steps, in which, in the course of the first process step, a layer of arsenic is formed on the region of monocrystalline silicon by heating the semiconductor body in an atmosphere with an arsenic compound, and, in the course of the second process step, a layer of non-monocrystalline silicon is formed as an auxiliary layer on the region of silicon oxide by heating the semiconductor body in an atmosphere comprising a gaseous silicon compound instead of a gaseous arsenic compound.

2. A method as claimed in claim 1, characterized in that during the formation of the auxiliary layer, the semiconductor body is heated during the first process step in an atmosphere comprising, in addition to the gaseous arsenic compound, the gaseous silicon compound used during the second process step.

3. A method as claimed in claim 1 or 2, characterized in that the second process step is ended before deposition from the silicon compound takes place on the arsenic layer formed on the region of monocrystalline silicon.

4. A method as claimed in claim 1, 2 or 3, characterized in that during the formation of the auxiliary layer, the semiconductor body is heated during both process steps at a temperature in the range between 400 and 600 °C in an atmosphere with a pressure below 500 mTorr.

5. A method as claimed in any one of the preceding claims, characterized in that after the formation of the auxiliary layer, a silicon-containing layer is deposited on the arsenic layer and the auxiliary layer by heating the semiconductor body in an atmosphere comprising a silicon compound.

6. A method as claimed in claim 5, characterized in that as the silicon-containing layer, a layer of $Si_{1-x}Ge_x$ is deposited, where $0.05 < x < 0.20$, to which less than 0.2 at.% carbon is added, by heating the semiconductor body in an atmosphere comprising a silicon compound and a germanium compound.

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7. A method as claimed in claim 5 or 6, characterized in that in the region of monocrystalline silicon, an n-type collector zone of a bipolar transistor is formed, and in the monocrystalline layer of $Si_{1-x}Ge_x$ deposited thereon, a p-type base zone of this transistor is formed.